



Tutorial 3: HTML and CSS

CS 104

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Topics

- Visual Studio Code
- HTML tags (review)
- CSS
- Exercises



Visual Studio Code

- Introduction
- Demo

VS Code



Some pros of VSCode :-

- ❖ It is free and open-source.
- ❖ It is cross-platform, so it can be used on Windows, macOS, and Linux.
- ❖ It is extensible, with a large number of extensions available to add new features and functionality.
- ❖ It is customizable, so you can change the look and feel to suit your preferences.
- ❖ It is lightweight and fast, so it can be used on even older computers.
- ❖ It has a large and active community, with a lot of resources available online.
- ❖ It is a popular choice for web development, data science etc
- ❖ It has built-in git support
- ❖ It has intellisense, an intelligent code completion feature.

Installation

- ❖ For [Ubuntu](#), [Windows](#), [MacOS](#)

```
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ sudo snap install --classic code
[sudo] password for aria:
code 0ee08df0 from Visual Studio Code (vscode**) installed
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ code --version
1.85.1
0ee08df0cf4527e40edc9aa28f4b5bd38bbff2b2
x64
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ mkdir CS104
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop$ cd CS104
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop/CS104$ touch homepage.html
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop/CS104$ code .
aria@aria-IdeaPad-Slim-5-14IAH8:~/Desktop/CS104$
```

Useful Features

- An integrated terminal
- Auto-save
- Syntax highlighting
- Many, many extensions like IntelliSense, Live Preview
- VS Code IntelliSense is provided for JavaScript, TypeScript, JSON, HTML, CSS, SCSS, and Less out of the box.
- Can have a richer IntelliSense by installing language extensions





HTML tags (review)

- VSCode preview extension
- Tags

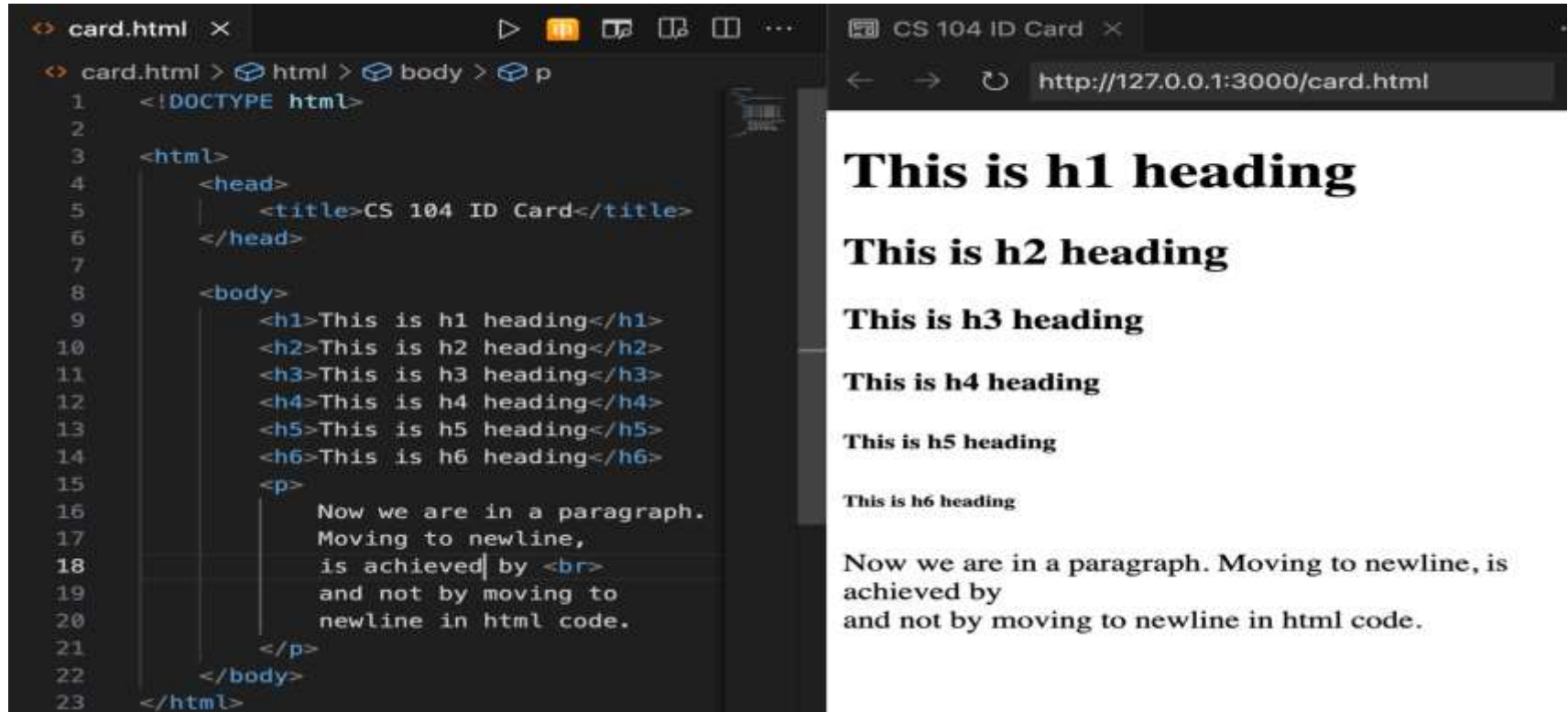
HTML Document

<> card.html >  html >  head

```
1  <!DOCTYPE html>
2
3  <html>
4      <head>
5      |
6      </head>
7
8      <body>
9
10     </body>
11 </html>
```

- ❖ `<!DOCTYPE html>` declares the document type to be **HTML**.
- ❖ The HTML document is enclosed between `<html>` and `</html>` tags.
- ❖ HTML document is divided in two parts, head and body.
- ❖ The head element enclosed within `<head>` and `</head>` represents a collection of metadata for the Document.
- ❖ The body element present in `<body>` and `</body>` represents the content of the document.

Title, headings and paragraphs.



The image shows a side-by-side comparison of HTML code and its rendered output. On the left, a code editor displays the HTML code for 'card.html'. The code includes a DOCTYPE declaration, an html root element, a head section with a title 'CS 104 ID Card', and a body section. The body contains six heading tags (h1 through h6) followed by a paragraph. The paragraph text is 'Now we are in a paragraph. Moving to newline, is achieved by
 and not by moving to newline in html code.' The paragraph is closed with </p>. The body and html tags are also closed. On the right, a web browser window shows the rendered page. The title bar says 'CS 104 ID Card'. The address bar shows 'http://127.0.0.1:3000/card.html'. The page content displays the rendered headings and paragraph, with the h1 heading being the largest and the h6 heading being the smallest. The paragraph text is displayed with a line break after 'Moving to newline,'.

```
1 <!DOCTYPE html>
2
3 <html>
4   <head>
5     <title>CS 104 ID Card</title>
6   </head>
7
8   <body>
9     <h1>This is h1 heading</h1>
10    <h2>This is h2 heading</h2>
11    <h3>This is h3 heading</h3>
12    <h4>This is h4 heading</h4>
13    <h5>This is h5 heading</h5>
14    <h6>This is h6 heading</h6>
15    <p>
16      Now we are in a paragraph.
17      Moving to newline,
18      is achieved by <br>
19      and not by moving to
20      newline in html code.
21    </p>
22  </body>
23 </html>
```

This is h1 heading

This is h2 heading

This is h3 heading

This is h4 heading

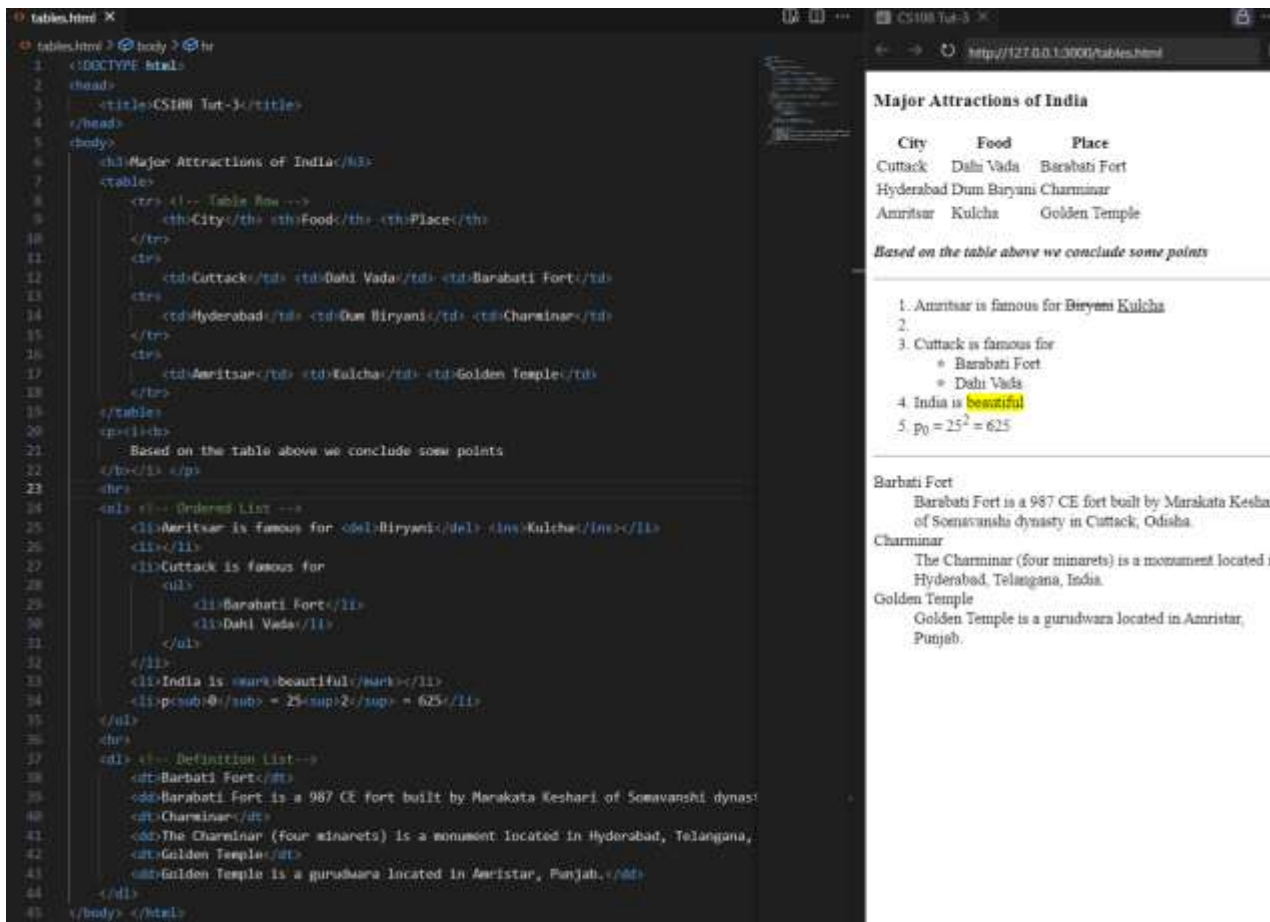
This is h5 heading

This is h6 heading

Now we are in a paragraph. Moving to newline, is achieved by
and not by moving to newline in html code.

- ❖ The title of the webpage is written within `<title>` and `</title>` in the head element
- ❖ There are 6 heading levels, from `<h1>` to `<h6>`, largest to smallest.
- ❖ The paragraph is written inside `<p>` and `</p>`, whereas `
` is used to break line.

Tables, Lists and Formatting



The screenshot displays a code editor on the left and a web browser on the right. The code editor shows the HTML source for 'tables.html', which includes a table of Indian attractions, a list of points, and definition lists for specific locations. The browser shows the rendered output of this HTML.

Major Attractions of India

City	Food	Place
Cuttack	Dahi Vada	Barabati Fort
Hyderabad	Dum Biryani	Charminar
Amritsar	Kulcha	Golden Temple

Based on the table above we conclude some points

1. Amritsar is famous for Biryani Kulcha
- 2.
3. Cuttack is famous for
 - * Barabati Fort
 - * Dahi Vada
4. India is beautiful
5. $p_0 = 25^2 = 625$

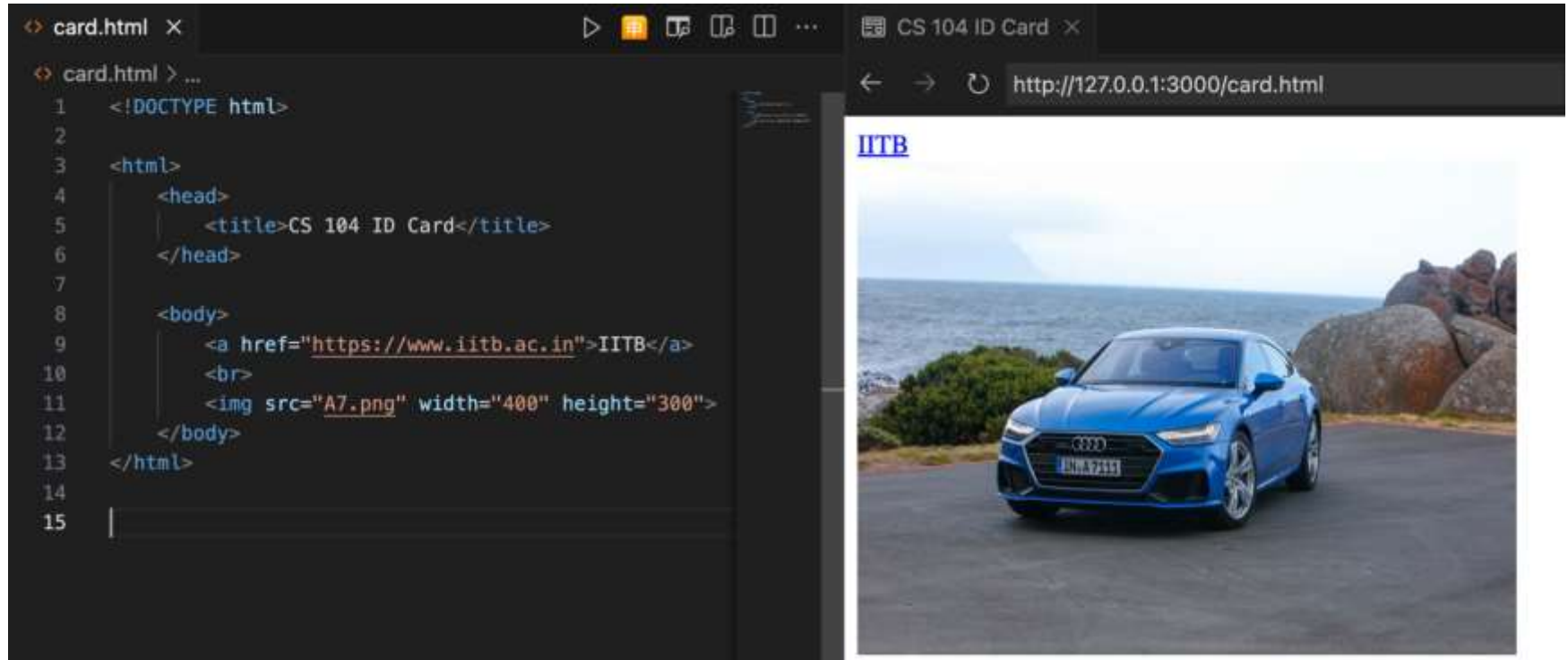
Barabati Fort
Barabati Fort is a 987 CE fort built by Marakata Keshari of Somavanshi dynasty in Cuttack, Odisha.

Charminar
The Charminar (four minarets) is a monument located in Hyderabad, Telangana, India.

Golden Temple
Golden Temple is a gurudwara located in Amritsar, Punjab.

- ❖ Tables are created using `<table>` tag. `<tr>` represents table rows. `<th>` and `<td>` are table header and table data respectively.
- ❖ List items are defined inside `` tags. `` creates ordered lists, and `` creates unordered lists.
- ❖ Try out nesting `` inside `` and same for ``!
- ❖ Definition lists `<dl>` creates a list of terms with definition.
- ❖ `` (bold) and `<i>` (italic) are text styling tags.
- ❖ `<sub>` and `<sup>` produce subscripting and superscripting respectively.
- ❖ `<mark>`, `<ins>` and `` are used to highlight, underline and strikethrough

Links and images




- ❖ The url is written in **href** attribute of **<a>** tag, text enclosed in between **<a>** and **** is displayed on the webpage. When clicked, the page redirects to the url, to open on a new tab, set **target** attribute to **"_blank"**.
- ❖ The image location is given to the **src** attribute of **** tag, height and width can be adjusted.


Videos and iframe

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <title>Videos</title>
5 </head>
6 <body>
7   <p>The following shows a video from our local directory</p>
8   <br>
9   <video src="video.mp4" height="200" controls></video>
10  <br>
11  <p>The following is fetched from youtube and is embedded
12  using iframe</p>
13  <iframe width="400" height="300"
14  src="https://www.youtube.com/embed/shxiermazzq?si=atrjh_cnuozvll0a"
15  title="Youtube video player"
16  frameborder="0"
17  allow="accelerometer; autoplay; clipboard-write; encrypted-media;
18  gyroscope; picture-in-picture; web-share"
19  referrerpolicy="strict-origin-when-cross-origin" allowfullscreen></iframe>
20 </body>
21 </html>
```

The following shows a video from our local directory



The following is fetched from youtube and is embedded using iframe



- ❖ Like images, video location is given to the **src** attribute of the **<video>** tag. The **controls** attribute adds video controls like play, pause and volume.
- ❖ The **<iframe>** tag can be used to display a youtube video in the web page.

Favicon and Comments

<> favicon.html x

<> favicon.html > html

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <title>CS108 Webpage</title>
5   <!-- Favicons are small icons that appear in the browser tab of your webpage. -->
6   <link rel="icon" href="logo.png" type="image/x-icon">
7 </head>
8 <body>
9   <p>Favicons are small icons that appear in the browser tab of your webpage.</p>
10 </body>
11 </html>
```



- ❖ Everything between `<!--` and the `-->` will be hidden from the display on the web page.
- ❖ To setup a favicon, we `<link>` our current document to the icon in the `href` attribute, we also specify the type of linked resource to be an icon by setting `rel` and `type` attributes as shown

Forms

```
ms.html > html > body > form > label
<body>
  <form action="/tables.html" method="post">
    <!-- text input -->
    <label for="name">Name</label>
    <input type="text" id="name" name="name">
    <br><br>

    <!-- radio buttons -->
    <label>Grad Year</label>
    <input type="radio" id="2025" name="batch" val
    <label for="2025">2025</label>
    <input type="radio" id="2026" name="batch" val
    <label for="2026">2026</label>
    <input type="radio" id="2027" name="batch" val
    <label for="2027">2027</label>
    <br><br>

    <!-- checkboxes -->
    <label>Courses you've taken</label>
    <input type="checkbox" id="cs101" name="cs101"
    <label for="cs101">CS101</label>
    <input type="checkbox" id="cs108" name="cs108"
    <label for="cs108">CS108</label>
    <input type="checkbox" id="ma106" name="ma106"
    <label for="ma106">MA106</label>
    <br><br>

    <!-- button -->
    <label for="clickme">Clickable Button</label>
    <input type="button" value="Click me" name="cl
    <br><br>

    <!-- submit button -->
    <input type="submit" value="Submit">
  </form>
</body>
```

← → ↺ http://127.0.0.1:3000/forms.html

Name

Grad Year ☐ 2025 ☐ 2026 ☐ 2027

Courses you've taken ☐ CS101 ☐ CS108 ☐ MA106

Clickable Button

- ❖ We use `<form>` to create a **HTML** form, **action** attribute specified the target URL where the data will be sent, **method** attribute defines the **HTTP** method to be used.
 - In case of get, the data is displayed in the URL
- ❖ The `<input>` tags are used to take any input from user side. The attribute **type** specifies what kind of input. By default it is **"text"**
 - **type** = **"radio"**: Single Choice
 - **type** = **"checkbox"**: Multi Choice
 - **type** = **"button"**: Clickable button
 - **type** = **"submit"**: Submitting form data to a handler that is specified in the action attribute of `<form>`
- ❖ The **for** attribute in `<label>` corresponds to the **id** attribute of `<input>`.
- ❖ The **name** attribute is used for server side script.
- ❖ In case of buttons and submit input, the **value** attribute determines the text on the button.
- ❖ `<select>` tag lists a dropdown. More on this in Exercise!



CSS

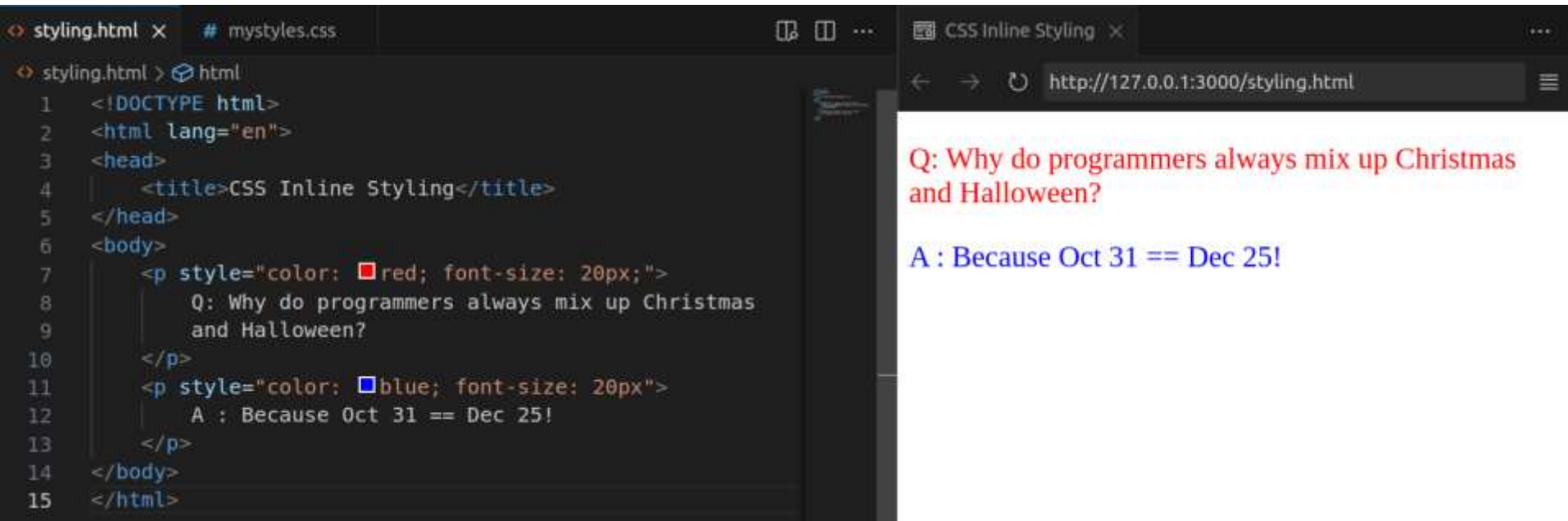
- Class and ID
- Inline Styling
- Internal Styling
- External Styling
- Div element

Class and ID



- ❖ Classes are used to group HTML elements together and apply styles or behavior to multiple elements simultaneously.
 - `<tag class="classname">Content</tag>`
- ❖ Elements can have multiple classes separated by spaces
 - `<tag class="class1 class2">Content</tag>`
- ❖ IDs are used to uniquely identify a single HTML element on a page. IDs must be unique within a document. No two elements should share the same ID.
 - `<tag id="elementID">Content</tag>`
- ❖ Classes and IDs are commonly used in CSS to apply styles to specific groups of elements:
 - `.classname { /* styles */ }`
 - `#elementID { /* styles */ }`
 - `tagname { /* styles */ }`
- ❖ Classes are often used in JavaScript for selecting and manipulating groups of elements, whereas IDs are to target and manipulate specific elements.

Inline Styling



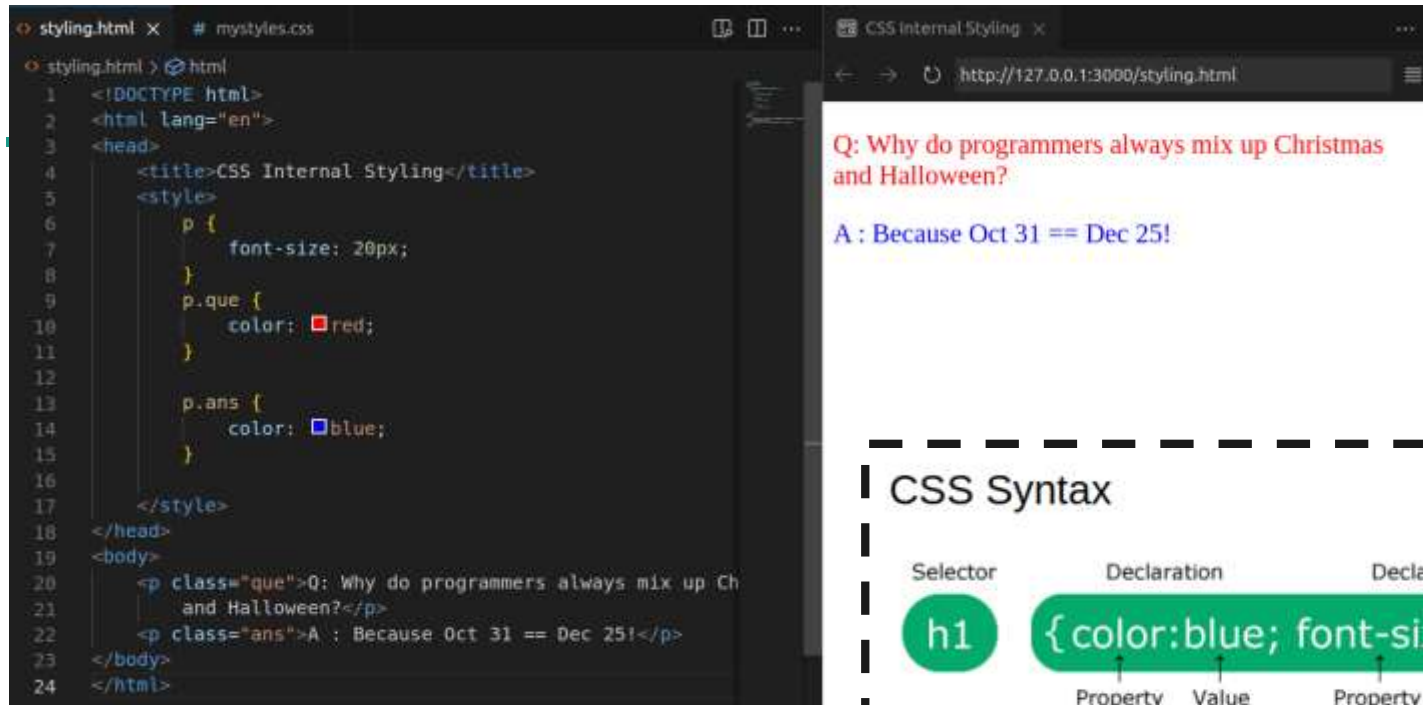
The image shows a web browser window on the right and a code editor on the left. The browser window displays the rendered HTML from the code editor. The code editor shows the following HTML code:

```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <title>CSS Inline Styling</title>
5 </head>
6 <body>
7   <p style="color: red; font-size: 20px;">
8     Q: Why do programmers always mix up Christmas
9     and Halloween?
10  </p>
11  <p style="color: blue; font-size: 20px">
12    A : Because Oct 31 == Dec 25!
13  </p>
14 </body>
15 </html>
```

The browser window shows the rendered output of this code. The text "Q: Why do programmers always mix up Christmas and Halloween?" is displayed in red, and the text "A : Because Oct 31 == Dec 25!" is displayed in blue. Both lines of text are in a larger font size than the default.

- ❖ Inline styling involves applying styles directly to individual HTML elements using the `style` attribute.
- ❖ In this example, the `style` attribute is used to set the color to `red` for the Question and `blue` for the Answer and the font size is `20px` for both the `<p>` tags.

Internal Styling



The screenshot shows a code editor on the left and a web browser on the right. The code editor displays an HTML file named 'styling.html' with internal CSS rules defined in a `<style>` tag within the `<head>` section. The CSS rules are:

```
<style>
  p {
    font-size: 20px;
  }
  p.que {
    color: red;
  }
  p.ans {
    color: blue;
  }
</style>
```

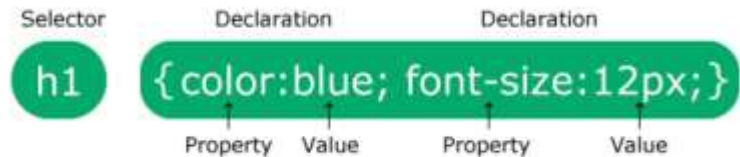
The browser window shows the rendered page at `http://127.0.0.1:3000/styling.html`. The page content is:

Q: Why do programmers always mix up Christmas and Halloween?

A : Because Oct 31 == Dec 25!

The text 'Q: Why do programmers always mix up Christmas and Halloween?' is rendered in red, and the text 'A : Because Oct 31 == Dec 25!' is rendered in blue, demonstrating the effect of the internal CSS rules.

CSS Syntax

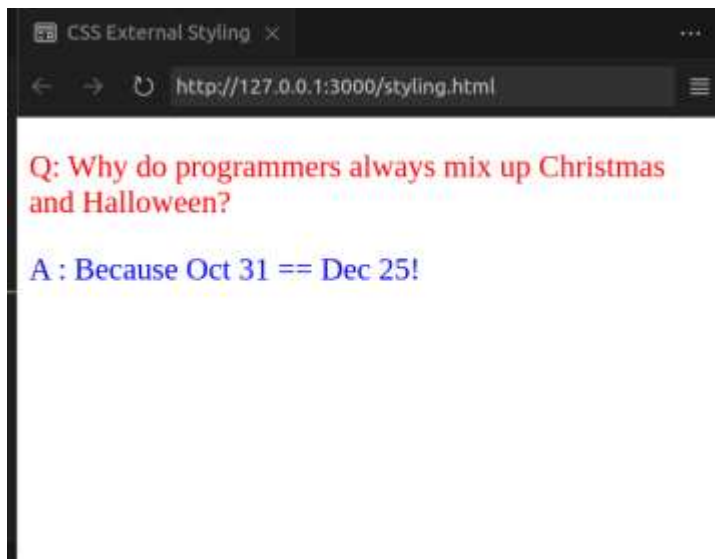


- ❖ Internal styling is achieved by placing CSS rules within a `<style>` tag in the HTML document, typically within the `<head>` section.
- ❖ Follow the CSS syntax to add styles to different elements, classes, ids. Selector `p` describes styling for all `<p>` tags, Selector `p.que` describes styling for all `<p>` tags with `class = "que"`

External Styling

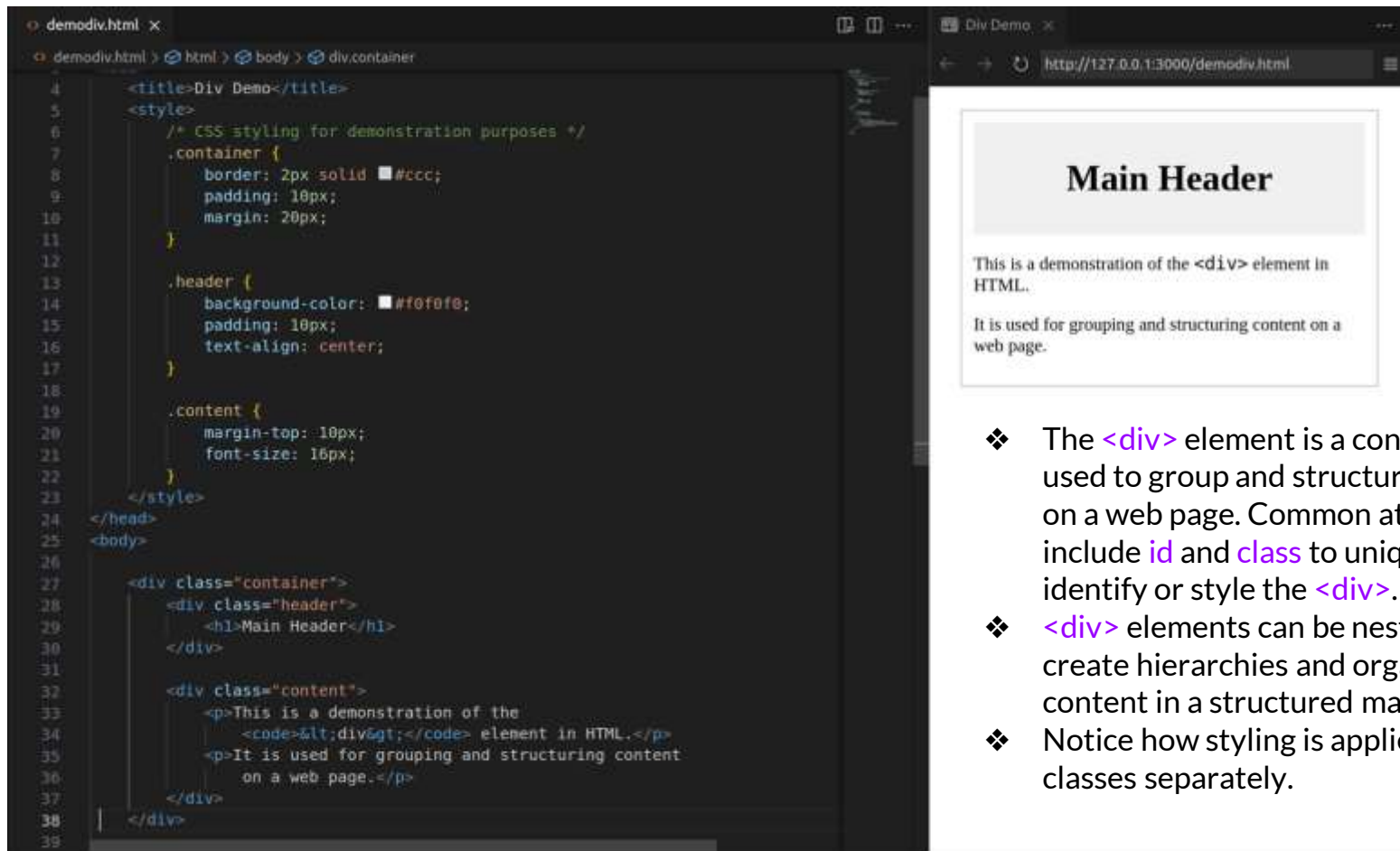
```
styling.html x
styling.html > html
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <title>CSS External Styling</title>
5   <link rel="stylesheet" href="mystyles.css">
6 </head>
7 <body>
8   <p class="que">Q: Why do programmers always mix up
9     Christmas
10    and Halloween?</p>
11   <p class="ans">A : Because Oct 31 == Dec 25!</p>
12 </body>
13 </html>

# mystyles.css x
# mystyles.css > p.ans
1 p {
2   font-size: 20px;
3 }
4 p.que {
5   color: red;
6 }
7
8 p.ans {
9   color: blue;
10 }
```



- ❖ External styling involves linking an external CSS file to the HTML document using the `<link>` element within the `<head>` section.
- ❖ To read more about CSS selectors: https://www.w3schools.com/css/css_selectors.asp

<div> element



The image shows a code editor on the left and a web browser on the right. The code editor displays the HTML and CSS for a demo page. The CSS defines three classes: .container (border, padding, margin), .header (background-color, padding, text-align), and .content (margin-top, font-size). The HTML structure uses these classes to create a container, a header, and a content area. The browser on the right shows the rendered page with a grey header and a white content area.

```
demodiv.html x
demodiv.html > html > body > div.container
4 <title>Div Demo</title>
5 <style>
6 /* CSS styling for demonstration purposes */
7 .container {
8   border: 2px solid #ccc;
9   padding: 10px;
10  margin: 20px;
11 }
12
13 .header {
14   background-color: #f0f0f0;
15   padding: 10px;
16   text-align: center;
17 }
18
19 .content {
20   margin-top: 10px;
21   font-size: 16px;
22 }
23 </style>
24 </head>
25 <body>
26
27 <div class="container">
28   <div class="header">
29     <h1>Main Header</h1>
30   </div>
31
32   <div class="content">
33     <p>This is a demonstration of the
34       <code><div></code> element in HTML.</p>
35     <p>It is used for grouping and structuring content
36       on a web page.</p>
37   </div>
38 </div>
39
```

Div Demo x
http://127.0.0.1:3000/demodiv.html

Main Header

This is a demonstration of the `<div>` element in HTML.

It is used for grouping and structuring content on a web page.

- ❖ The `<div>` element is a container used to group and structure content on a web page. Common attributes include `id` and `class` to uniquely identify or style the `<div>`.
- ❖ `<div>` elements can be nested to create hierarchies and organize content in a structured manner.
- ❖ Notice how styling is applied to div classes separately.

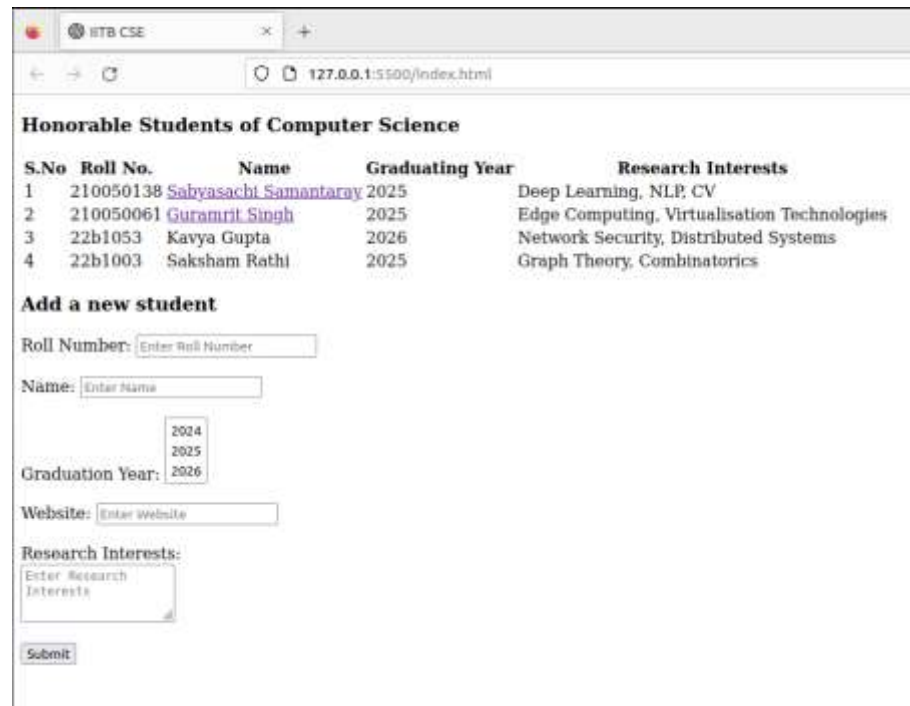


Exercises

- HTML
- CSS

Exercise 1 (Template with HTML)

- ❖ A simple template of a IITB CSE student information page.
- ❖ Deliverables:
 - Favicon and Title of the web page
 - Table of students with their information
 - Hyperlinked names with their webpages
 - A form to collect information of a new student to be added
 - All input sections except Website is mandatory
 - Dropdown for Graduation Year
 - Placeholder Text as shown in Figure
 - Submit Button(Non Functional as of Now)
- ❖ Solution: [index.html](#) (provided)



S.No	Roll No.	Name	Graduating Year	Research Interests
1	210050138	Sabyasachi Samantary	2025	Deep Learning, NLP, CV
2	210050061	Guramrit Singh	2025	Edge Computing, Virtualisation Technologies
3	22b1053	Kavya Gupta	2026	Network Security, Distributed Systems
4	22b1003	Saksham Rathi	2025	Graph Theory, Combinatorics

Add a new student

Roll Number:

Name:

Graduation Year:

Website:

Research Interests:

Exercise 2 (Styling with CSS)

- ❖ In extension to the previous exercise, now add styling to enhance the visual appeal of the HTML template.
- ❖ Additionally, remove the default features of the `<a>` tag, where in the links are blue and underlined. Instead now, it shows underline only when hovered.
- ❖ Do all the styling in file `styles.css` and link it with the html file.
- ❖ Solution: `styles.css` (provided)
- ❖ Coming Up (Next Week):
 - On submitting details of a new student, it updates the table above.

The screenshot shows a web browser displaying a web application. At the top, there's a title "Honorable Students of Computer Science" above a table. The table has five columns: S.No, Roll No., Name, Graduating Year, and Research Interests. It contains four rows of student data. Below the table is a form titled "Add a new student". The form has input fields for Roll Number, Name, Graduation Year (with a dropdown menu showing 2024, 2025, 2026, and 2027), Website, and Research Interests. A green "Submit" button is at the bottom of the form.

S.No	Roll No.	Name	Graduating Year	Research Interests
1	210050138	Sabyasachi Samantaray	2025	Deep Learning, NLP, CV
2	210050061	Guramrit Singh	2025	Edge Computing, Virtualisation Technologies
3	22b1053	Kavya Gupta	2026	Network Security, Distributed Systems
4	22b1003	Saksham Rathi	2026	Graph Theory, Combinatorics

Add a new student

Roll Number:

Name:

Graduation Year:

Website:

Research Interests:



Thank You !!!